

Front Cover: A picture from the past -- a little girl examines a Coos Bay, Oregon Striped Bass. Photo by Magill, NMFS.

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GRANT-IN-AID FOR FISHERIES  
PROGRAM ACTIVITIES  
1983

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## AUTHORIZATION

This report is submitted in compliance with the requirement of Section 9(a) of the Fish and Wildlife Act of 1956, as amended, 16 U.S.C. 742d(7) and Section 2 of the Anadromous Fish Conservation Act of 1965, as amended, 16 U.S.C. 757b.

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## INTRODUCTION

This is the 16th in a series of annual publications on program activities under the Grant-in-Aid for Fisheries Program of the Office of Fisheries Management, National Marine Fisheries Service (NMFS).

Information presented in this report provides State program coordinators and administrators, Federal personnel, project personnel, and others concerned with research, development, conservation, and management of our fishery resources with a convenient reference to the grant-in-aid program. This publication will also facilitate planning, coordination, and integration of State, Federal, and private sector activities concerned with the fishery resources.

## THE ACTS

The NMFS Grant-in-Aid Program is authorized under two Acts:

1. The Commercial Fisheries Research and Development Act of 1964 (Public Law 88-309 as amended) - Authorizes the Secretary of Commerce to cooperate with the 50 States, the Commonwealths of Puerto Rico and the Northern Mariana Islands, and the Governments of the Virgin Islands, Guam, American Samoa, and the Trust Territory of the Pacific Islands, in carrying out research and development of the Nation's commercial fisheries. Projects eligible for funding include research, development, construction, and coordination. Cost-sharing projects under subsection 4(a) are funded up to the 75 percent level of Federal participation, whereas projects under subsection 4(b), to alleviate resource disasters, may be financed 100 percent with Federal funds. This Act would have expired June 1973; however, it was extended by Public Laws 92-590, 95-53, 96-62 and 97-389 for an additional 12 years, or to September 30, 1985. The authorized levels are \$5 million for subsection 4(a), and \$2.5 million for subsection 4(b).

2. The Anadromous Fish Conservation Act of 1965 (Public Law 89-304, as amended) - Authorizes the Secretary of Commerce and the Secretary of Interior to enter into cooperative agreements with States and other non-Federal interests for the conservation, development, and enhancement of the anadromous fishery resources of the Nation and the fish in the Great Lakes and Lake Champlain that ascend streams to spawn, and for the control of the sea lamprey. The program is administered at the Federal level jointly by the National Marine Fisheries Service and the U.S. Fish and Wildlife Service. Federal funds up to 50 percent, 66 2/3 percent when two or more States cooperate, or 90% to carry out projects required by interstate fishery management plans, may be used to finance project costs. State fishery agencies, colleges, universities, private companies, and other non-Federal interests in 31 States bordering the oceans and the Great Lakes may participate under the Act. All projects must be coordinated with the State fishery agency concerned. The authorization for this Act was renewed in January 1983 by Public Law 97-453. This Act set authorized levels at \$7.5 million for fiscal years 1983, 1984, and 1985 for grants under Section 4, and reauthorized Section 7, the emergency research program to study striped bass populations and to identify factors responsible for the current decline, for fiscal years 1983 and 1984 at \$1 million each year.

Fisheries Service grant-in-aid for fisheries program (Public Law 88-309 and Public Law 89-304) in Fiscal Year 1983, is given in the following tabulation:

State and Others	FY 1983	
	P.L. 88-309	P.L. 89-304
Alabama .....	\$ 119,700	\$ 91,400
Alaska .....	240,000	502,850
Arizona .....	20,000	
Arkansas .....	25,000	
California .....	240,000	362,000
Colorado .....	20,000	
Connecticut .....	20,000	42,000
Delaware .....	29,400	
Florida .....	240,000	
Georgia .....	66,700	
Hawaii .....	34,200	
Idaho .....	20,000	
Illinois .....	20,000	
Indiana .....	20,000	
Iowa .....	20,000	
Kansas .....	20,000	
Kentucky .....	20,000	
Louisiana .....	240,000	
Maine .....	184,100	70,380
Maryland .....	114,300	94,620
Massachusetts .....	240,000	60,000
Michigan .....	20,000	
Minnesota .....	20,000	
Mississippi .....	164,900	36,000
Missouri .....	20,000	
Montana .....	20,000	
Nebraska .....	20,000	
Nevada .....	20,000	
New Hampshire .....	37,100	90,000
New Jersey .....	104,600	20,000
New Mexico .....	20,000	
New York .....	92,200	82,700
North Carolina .....	74,100	64,000
North Dakota .....	20,000	
Ohio .....	54,300	
Oklahoma .....	20,000	
Oregon .....	105,100	593,180
Pennsylvania .....	71,800	
Rhode Island .....	33,300	20,000
South Carolina .....	25,300	45,500
South Dakota .....	20,000	
Tennessee .....	20,000	
Texas .....	240,000	
Utah .....	20,000	
Vermont .....	20,000	
Virginia .....	146,600	152,000
Washington .....	129,800	523,000
West Virginia .....	20,000	
Wisconsin .....	20,000	35,000
Wyoming .....	20,000	
American Samoa .....	127,500	
Guam .....	20,000	
Puerto Rico .....	240,000	
Virgin Islands .....	20,000	
Trust Territory of the Pacific Islands .....	20,000	
Northern Mariana Islands .....	20,000	
Pacific Marine Fisheries Commission .....	-	65,300
NW Indian Tribes .....	-	
Atlantic States Marine Fisheries Commission .....	-	10,000
NMFS Northeast Center .....	-	40,000

such areas as the environment, freshwater finfish, marine finfish, and shellfish; 6.7 percent for collection of statistics; 5.6 percent for extension service; 5.2 percent for construction; and less than 5 percent for each of the other program activities. Funding figures shown include both State and Federal dollars for all 1983 project segments.

Activity	Public Laws		Total	
	88-309 (\$1,000)	89-304 (\$1,000)	Dollars (\$1,000)	Percent (Total)
<u>Aquaculture</u>	<u>206</u>	-	<u>206</u>	1.7
<u>Construction</u>	-	<u>634</u>	<u>634</u>	5.2
Fish screens and stream improvement facilities	-	80	80	
Hatcheries and hatchery facilities	-	554	554	
Laboratories	-	-	-	
Vessel	-	-	-	
<u>Coordination</u>	<u>43</u>	-	<u>43</u>	.4
<u>Disease and parasite control</u>	<u>92</u>	-	<u>92</u>	.7
<u>Extension service</u>	<u>692</u>	-	<u>692</u>	5.6
<u>Market development</u>	-	-	-	
<u>Operation and maintenance</u>	-	<u>180</u>	<u>180</u>	1.4
<u>Planning</u>	-	-	-	
<u>Research</u>	<u>3,864</u>	<u>5,625</u>	<u>9,489</u>	78.0
Environment	90	-	90	
Finfish (Freshwater)	940	70	1,010	
Finfish (Marine or Anadromous)	1,677	5,463	7,140	
Shellfish	1,157	92	1,249	
<u>Statistics</u>	<u>871</u>	-	<u>871</u>	7.0
 TOTAL	 5,768	 6,439	 12,207	 100.0

## FISCAL YEAR 1983

All 50 states, the Commonwealths of Puerto Rico and the Northern Mariana Islands, Governments of American Samoa, Guam, the Virgin Islands, and the Trust Territory of Pacific Islands, and certain Northwest Indian tribes are participating in the program under one or both authorizations. In FY 1983, 44 projects were completed at an estimated cost (State and Federal dollars combined) of \$8,260,000; 133 projects were initiated or continuing at an estimated cost of \$46,613,000. The average Federal share of the Public Law 88-309 projects is 67 percent; the average Federal share of the Public Law 89-304 projects is 53 percent.

Tabulation of completed and continuing projects including total cost follows:

Public Law	<u>Completed Projects</u>		<u>Continued Projects</u>		<u>Total Projects</u>	
	Number	Total Cost \$1,000	Number	Total Cost \$1,000	Number	Total Cost \$1,000
88-309	21	3,746	95	22,921	116	26,667
89-304	23	4,514	38	23,692	61	28,206
TOTAL	44	8,260	133	46,613	177	54,873

A list of continuing projects and those completed in 1983, under each authorization by State, including duration, date completed, and page reference for project narrative, is tabulated on pages 5 through 18. Under Public Law 88-309, project numbers identify the Region administering the project by the first digit, project number sequence within the Region by the next digit(s), followed by a letter to denote activity as R-research, C-construction, D-development, and S-coordination. Under Public Law 89-304, the first two letters, identify the project as anadromous fish, with next letter "C" for projects administered by NMFS, or jointly funded projects with U.S. Fish and Wildlife Service (FWS) with NMFS as lead agency, and "CS" for jointly funded projects with FWS as lead agency, followed by a number sequence within each State.

	<u>ALABAMA</u>						
309	2-391-R	Research and management of Alabama coastal fisheries	1982	3	F-462,000 S-154,000		32
304	AFC-12	Striped bass production and stocking experiments in Alabama coastal areas (Study No. 2)	1979	3	F-201,086 S-201,086 (Includes FWS share)	1983	30
	AFC-13	Increasing yield of striped bass fingerlings through intensive culturing methods	1979	3	F- 54,600 S- 54,600	1983	30
	AFC-21	Improving yield of striped bass fingerlings through improved nutrition	1983	3	F- 49,950 S- 49,950		31
	AFC-23	Alabama and Mississippi cooperative striped bass restoration program	1983	3	F-231,000 S-115,500 (Includes FWS share)		31
	<u>ALASKA</u>						
309	5-49-R	Gulf of Alaska - Bering Sea groundfish investigations	1981	3	F- 172,100 S- 178,600		28
	5-50-R	Stock assessment of Pacific herring, Bristol Bay, Alaska	1982	5	F-560,000 S-202,500		28
	5-51-R	Pacific herring research - S.E. Alaska	1982	5	F-280,000 S-100,000		28
304	AFC-65	Chignik sockeye studies	1981	3	F -84,100 S -108,600		28
	AFC-67	Microwire tagging of wild coho salmon stocks	1981	5	F-530,000 S-452,300		28
	AFC-70	Southeastern Alaska sockeye salmon stock apportionment studies	1982	5	F-330,000 S-347,100		29
	AFC-71	Southeastern Alaska pink and chum studies	1982	5	F-627,900 S-824,700		29
	AFC-72	Southeastern Alaska port sampling	1982	5	F- 652,200 S-1,300,000		29

88-309	<u>AMERICAN SAMOA</u> 4-46-D	Fisheries technical assistance	1979	3	F-227,121 S- 0
	4-63-D	Export Fish Marketing	1983	1	F-25,500 S- 0
	4-65-D	PVC Pipes Bottomfish Longlining	1983	1	F- 29,400 S- 0
88-309	<u>ARIZONA</u> 4-56-D	Distribution and relative abundance of freshwater clams	1982	2	F- 65,505 S- 21,835
88-309	<u>ARKANSAS</u> 2-371-R	Commercial fishery survey	1980	3	F-165,348 S- 55,116
88-309	<u>CALIFORNIA</u> 4-59-D	Fisheries monitoring and assessment program	1982	3	F-340,035 S-113,346
	4-62-D	Southern California Commercial Fisheries Assessment	1983	3	F-284,180 S- 94,727
89-304	AFC-16	Salmon and steelhead research, management and enhancement	1981	3	F-1,134,305 S-1,134,305
88-309	<u>COLORADO</u> 1-161-R	Baitfishes of Colorado	1981	3	F- 9,825 S- 3,275
	1-169-R	Warm water fish culture	1983	3	F-105,000 S- 35,000
88-309	<u>CONNECTICUT</u> 3-374-R	Connecticut lobster investigations	1982	5	F- 82,625 S- 82,625
89-304	AFC-13	Population dynamics of American shad in the Connecticut River	1981	4	F- 78,000 S- 78,000
	AFC-14	Kensington Atlantic salmon hatchery modernization	1982	1	F- 21,600 S- 21,600

88-309	<u>DELAWARE</u>					
	3-358-D	Technical assistance to commercial fisheries	1982	3	F-183,400 S- 61,134	
88-309	<u>FLORIDA</u>					
	2-336-D	Fisheries extension and marketing services program	1978	5	F-879,732 S-293,245	
	2-341-R	Florida's marine resources research, development, and management program	1978	5	F-635,200 S-211,733	
	2-370-D	Oyster cultivation by reef construction	1980	3	F- 92,125 S- 30,708	
	2-405-D	Fisheries extension and marketing services program	1983	3	F-700,000 S-233,333	
	2-407-D	Oyster cultivation by reef construction and oyster transplanting program	1983	3	F-100,000 S- 33,333	
	2-408-R	Florida's marine resources, research, development and management program	1983	5	F-500,000 S-166,666	
88-309	<u>GEORGIA</u>					
	2-379-R	Studies and assessment of Georgia's marine fisheries resources	1981	1	F- 77,700 S- 25,900	1983
	2-390-R	Studies and assessment of Georgia's marine fisheries resources	1983	2	F-235,125 S- 78,375	
89-304	AFC-18	Georgia commercial shad assessment	1980	2	F- 45,161 S- 45,161	1983
88-309	<u>GUAM</u>					
	4-58-D	Development of polyculture fish farming	1982	3	F- 60,000 S-147,000	
88-309	<u>HAWAII</u>					
	4-57-D	Seaweed investigations	1982	3	F-135,000 S- 45,000	
	4-64-D	Commercial Fisheries Statistics	1983	1	F- 31,000 S- 31,000	

Public Law		Project number and title	initiated	Duration	total cost	com- pleted
			<u>Year</u>	<u>Years</u>	<u>Dollars</u>	<u>Year</u>
88-309	<u>IDAHO</u> 1-171-R	Proliferative kidney disease in rainbow trout	1983	2	F- 58,747 S- 19,583	
88-309	<u>ILLINOIS</u> 3-327-R	Effects of three commercial harvesting methods on mussel beds	1979	4	F- 85,865 S- 29,419	198
	3-373-R	Effects of floating areas on mussel beds	1982	2	F- 20,000 S- 6,616	
	3-383-R	Age structure and analysis of carp populations in the Mississippi and Illinois Rivers	1983	2	F-10,000 S- 3,334	
88-309	<u>INDIANA</u> 3-336-R	Movements of yellow perch in Indiana waters of Lake Michigan	1980	3	F- 75,000 S- 74,728	198
	3-387-R	Selected character- istics of the yellow perch stock in Indiana waters of Lake Michigan	1983	3	F- 61,141 S- 63,838	
88-309	<u>IOWA</u> 2-384-R	Habitat associations and movements of shovelnose sturgeon with reference to spawning	1982	1	F- 20,000 S- 6,667	
	2-399-R	Spawning and early life history of shovelnose sturgeon	1983	1	F- 20,000 S- 6,667	
88-309	<u>KANSAS</u> 2-389-R	Kansas commercial fisheries statistics	1982	1	F- 20,000 S- 6,667	
	2-401-R	Kansas marketable fisheries investigation	1983	3	F- 60,000 S- 20,000	
88-309	<u>KENTUCKY</u> 2-388-R	Population dynamics and biology of the paddle- fish <u>Polydon spathula</u> in Lake Cumberland, KY	1982	2	F- 45,000 S- 15,000	

88-309	<u>LOUISIANA</u>		1982	1	F-183,000 S- 61,000	1983
	2-381-R	Monitoring and assessment activities in Louisiana's coastal waters				
	2-394-R	Research, development and management of Louisiana's coastal fisheries	1982	5	F- 1,200,000 S- 400,000	
88-309	<u>MAINE</u>		1982	3	F-135,146 S- 45,049	
	3-359-S	Coordination of research and development				
	3-368-D	Fisheries technology service				
	3-370-R	Lobster stock assessment				
	3-378-R	Early life histories of commercial shrimp and fish				
	3-389-R	Brit herring tagging studies				
	3-390-D	Environmental monitoring system renovation	1983	1	F- 21,150 S- 21,150	
89-304	AFC-21	Population biology and management of the alewife ( <u>Alosa pseudoharengus</u> ) in Maine	1979	4	F- 82,740 S- 82,740	1983
	AFC-23	Kennebec River anadromous stock evaluation	1982	3	F- 34,100 S- 34,100	
	AFC-24	Androscoggin River shad restoration, Maine	1982	3	F-181,024 S-181,024	
	AFC-25	Population biology of the alewife	1983	3	F- 44,478 S- 44,479	
88-309	<u>MARYLAND</u>		1980	5	F-554,217 S-554,217	
	3-345-D	Maryland fisheries statistics				
	3-365-D	Fisheries technology and advisory services				
	3-366-D	Fish environmental assessment	1982	1	F- 61,143 S- 20,382	1983

Public Law		Project number and title	initiated	Duration	total cost	completed
			<u>Year</u>	<u>Years</u>	<u>Dollars</u>	<u>Year</u>
	3-367-R	Monitoring & research of lethal oyster diseases in Chesapeake Bay	1983	1	F- 41,000 S- 41,000	
89-304	AFC-10	Survey and inventory of anadromous fish spawning areas	1980	3	F-204,900 S-204,900	1983
	AFC-11	Striped bass research, Maryland (Emergency Striped Bass Research Study)	1980	4	F-246,615 S-124,036	
	AFC-13	Striped bass fishery enhancement investigations	1982	1	F- 24,696 S- 24,696	1983
	AFC-14	Anadromous fish research, Maryland	1983	3	F- 223,860 S- 223,860	
88-309	<u>MASSACHUSETTS</u> 3-218-C	Construction of marine research station	1974	10	F-250,000 S-250,000	
	3-287-R	Coastwide fishery resource assessment	1978	5	F-507,750 S-169,250	1983
	3-363-D	Commercial fisheries development program	1982	3	F-275,764 S- 91,921	
	3-371-D	Collection, compilation, evaluation, and dissemination of Massachusetts fishery statistics	1982	3	F-232,832 S-155,221	
	3-375-R	Massachusetts fishery resource assessment	1983	3	F- 197,550 S- 197,550	
89-304	AFC-18	Characterization of Massachusetts striped bass landings (Emergency Striped Bass Research Study)	1981	3	F- 51,281 S- 25,641	
	AFC-19	Anadromous fisheries management	1981	5	F-349,600 S-349,600	
88-309	<u>MICHIGAN</u> 3-384-R	Assessment of whitefish populations in the treaty area of Lake Michigan	1983	4	F- 82,000 S- 34,000	

			<u>Year</u>	<u>Years</u>	<u>Dollars</u>	<u>Year</u>
	AFC-14	Lake Erie walleye assessment	1980	3	F-147,122 S-147,122	1983
88-309	<u>MINNESOTA</u> 3-344-R	Lake Superior commercial fisheries assessment studies	1981	4	F- 51,300 S- 17,100	
88-309	<u>MISSISSIPPI</u> 2-376-R	Experimental treatment of catfish ponds with algal inhibitors	1981	3	F-129,422 S- 43,141	
	2-393-R	Coastal fisheries monitoring and assessment - Mississippi coast	1982	4	F-420,000 S-140,000	
89-304	AFC-7	Striped bass restoration program - Mississippi Gulf Coast	1979	4	F-161,000 S-161,000 (includes FWS share)	1983
	AFC-24	Mississippi and Alabama cooperative striped bass restoration program	1983	3	F-183,000 S- 91,503 (includes FWS share)	
88-309	<u>MISSOURI</u> 2-363-R	Research and management of Missouri's commercial fisheries resources	1979	5	F-124,875 S- 41,625	
88-309	<u>MONTANA</u> 1-162-R	Development and management of commercial fishing practices	1982	5	F-100,000 S- 31,664	
88-309	<u>NEBRASKA</u> 2-359-R	Population estimates of Missouri River fishes	1979	5	F- 82,575 S- 27,525	
	2-360-R	Inland commercial fisheries investigations	1979	5	F- 51,825 S- 17,275	
	2-402-R	Nebraska commercial fishery investigations	1983	3	F-112,382 S- 37,461	
88-309	<u>NEVADA</u> 4-60-R	Production of sterile grass carp	1982	2	F- 36,794 S- 12,265	

Public Law	Project number and title	Date initiated	Duration	Estimated total cost
		<u>Year</u>	<u>Years</u>	<u>Dollars</u>
88-309	<u>NEW HAMPSHIRE</u> 3-343-D	1980	3	F- 77,250 S- 25,750
	3-351-R	1981	2	F- 59,821 S- 19,940
	3-381-D	1983	3	F- 72,000 S- 24,000
89-304	AFC-5	1980	3	F-240,000 S-240,000
	AFC-6	1983	3	F-300,000 S-300,000
88-309	<u>NEW JERSEY</u> 3-332-R	1979	5	F-192,072 S-192,072
	3-340-D	1980	3	F-112,500 S- 37,500
	3-364-R	1982	3	F- 72,000 S- 24,000
	3-367-R	1982	3	F-71,880 S-26,960
	3-388-D	1983	3	F-106,870 S- 35,620
89-304	AFC-5	1982	1	F- 34,000 S- 17,000
	AFC-6	1983	1	F- 20,000 S- 10,000

309	<u>NEW JERSEY</u> 2-366-R	Intensive harvest of commercial species	1980	4	F-111,000 S- 37,000		26
309	<u>NEW YORK</u> 3-346-S	Coordination III	1981	3	F- 60,200 S- 68,800		20
	3-347-C	Marine research vessel acquisition	1981	2	F- 44,000 S- 44,000	1983	20
	3-355-D	Shellfish resource promotion	1982	3	F-156,000 S-156,000		37
	3-356-R	Assessment of New York's shellfish resources II	1982	3	F-169,750 S-169,750		37
	3-357-R	Investigation of the American lobster in eastern Long Island Sound	1982	2	F- 16,465 S- 16,465		35
	3-360-D	Shellfish sanitation control utilizing mobile laboratories III	1982	3	F- 65,570 S- 65,570		37
304	AFC-11	Biology and management of striped bass in New York waters (Emergency Striped Bass Research Study)	1980	4	F-250,357 S-126,561		31
	AFC-12	A study of the striped bass in the marine district of New York IV	1982	3	F-176,340 S-176,340		32
309	<u>NORTH CAROLINA</u> 2-386-R	Assessment of North Carolina commercial finfisheries: Project I	1982	3	F-224,000 S- 74,667		34
304	AFC S-16	North Carolina anadromous fisheries management program	1979	3	F-362,650 S-362,650 (Includes FWS share)		34
	AFC-18	An investigation of a size, age and sex of North Carolina striped bass (Emergency Striped Bass Research Study)	1980	4	F-103,334 S- 51,666		32

			<u>Year</u>	<u>Years</u>	<u>Dollars</u>	<u>Year</u>
	AFC-19	Roanoke River striped bass investigation	1982	2	F- 34,000 S- 34,000	
	AFC-22	North Carolina andromous fishery management program	1983	2	F-80,000 S-80,000	
	<u>NORTH DAKOTA</u>					
88-309	1-146-R	The biology of <i>Diplostomum spathaceum</i> (eye flukes) and its relationship to fish of commercial value	1979	4	F- 30,000 S- 10,000	
	<u>NORTHERN MARIANAS</u>					
88-309	4-61-D	Fisheries data collection program	1982	1	F- 42,000 S- 6,500	1983
	4-66-D	Fishery Data Collection II	1983	1	F-34,000 S- 5,790	
	<u>OHIO</u>					
88-309	3-301-R	Commercial fishing gear mortality	1978	6	F-171,765 S- 75,835	
	3-379-R	Ecology of yellow perch in Lake Erie	1983	3	F-192,000 S- 64,000	
	<u>OKLAHOMA</u>					
88-309	2-396-R 2-397-R 2-398-R	Oklahoma commercial fisheries project (combined)	1983	1	F- 22,037 S- 7,346	
	<u>OREGON</u>					
88-309	1-151-R	Groundfish and shrimp assessment	1979	3	F-443,956 S-147,984	1983
88-304	AFC-98	Infectious disease program for salmon and steelhead hatcheries	1980	3	F-133,498 S-133,498	1983
	AFC-102	Research and development of Oregon's coastal fish stocks	1980	4	F-957,607 S-957,607	
	AFC-111	Regional Mark Processing Center	1981	2	F-165,000 S- 82,500	

			<u>Year</u>	<u>Years</u>	<u>Dollars</u>	<u>Year</u>
	AFC-112	Stock assessment and genetic studies of anadromous fish	1981	2	F- 62,480 S- 62,480	
	AFC-113	Joint Oregon-Washington multi-jurisdictional salmon management program	1981	3	F-865,607 S-432,804	
	AFC-117	Assessment of the ocean distribution and contribution of northern California and southern Oregon fall chinook stocks	1981	3	F- 65,936 S- 65,936	
	AFC-121	Management of the troll salmon fishery	1982	1	F- 24,710 S- 24,710	1983
	AFC-122	Stock assessment of anadromous salmonids	1982	1	F- 20,575 S- 20,575	1983
	AFC-123	Evaluation and development of techniques for salmon and steelhead trout culture	1982	1	F- 54,715 S- 54,715	1983
	<u>PENNSYLVANIA</u>					
88-309	3-337-R	Guidelines for effective management of commercial fish hatchery wastewater treatment systems	1980	5	F-235,511 S- 78,504	
	3-339-R	Lake Erie commercial fishery investigations	1980	4	F-223,731 S- 74,577	
	<u>PUERTO RICO</u>					
88-309	2-395-R	Puerto Rico commercial fisheries research and development program	1983	3	F- 750,573 S- 250,191	
	<u>RHODE ISLAND</u>					
88-309	3-376-R	Coastal fishery resource assessment	1983	3	F- 86,400 S- 28,800	
89-304	AFC-2	Fish ladder construction	1974	9	F- 89,967 S- 89,967	1983
	AFC-4	Striped bass stock assessment in Rhode Island waters (Emergency Striped Bass Research Study)	1981	3	F- 60,000 S- 30,000	

			<u>Year</u>	<u>Years</u>	<u>Dollars</u>	<u>Year</u>
	<u>SOUTH CAROLINA</u>					
88-309	2-392-R	A biological evaluation of the knobbed whelk fishery in South Carolina	1982	2	F- 61,300 S- 20,433	
89-304	AFC-20	Monitoring and assessment of the S.C. commercial fishery for shad (FY 1983)	1983	2	F-95,550 S-95,550	
	<u>SOUTH DAKOTA</u>					
88-309	1-163-R	Bionomics of rainbow smelt	1982	1	F- 10,000 S- 3,333	1983
	1-173-R	An estimate of abundance and distribution of rainbow smelt in Oahe Reservoir using hydroacoustic techniques	1983	5	F-139,331 S- 46,444	
	<u>TENNESSEE</u>					
88-309	2-373-R	Mussel resources survey	1980	4	F- 75,000 S- 25,000	
	<u>TEXAS</u>					
88-309	2-385-R	Texas commercial fisheries management program	1982	1	F-240,000 S- 80,000	1983
	<u>TRUST TERRITORY OF THE PACIFIC ISLANDS</u>					
88-309	4-54-D	Palau reef fish production	1982	1	F- 42,300 S- 17,660	1983
	4-55-D	Truk Lagoon small purse seine demonstration	1982	2	F- 57,000 S- 19,000	
	<u>UTAH</u>					
88-309	1-149-R	Physiological/genetic studies of trout strains in commercial and agency hatcheries	1979	5	F-121,800 S- 45,362	
	1-156-R	Potential of Utah chub to support a baitfish industry	1980	3	F- 31,037 S- 10,980	1983
	<u>VIRGIN ISLANDS</u>					
88-309	2-335-R	Commercial fisheries research and development in the U.S. Virgin Islands	1978	5	F-134,205 S- 44,735	

			<u>Year</u>	<u>Years</u>	<u>Donats</u>	<u>Year</u>
88-309	<u>VIRGINIA</u> 3-321-D	Fisheries profiles and plans	1979	4	F-228,153 S- 76,051	1983
	3-361-D	Commercial finfishery and shellfishery statistical collection	1982	3	F-252,300 S- 84,099	
	3-377-D	Development of oyster resources	1983	1	F-30,646 S-10,215	
89-304	AFC-10	Anadromous fisheries research program, Virginia	1979	5	F-386,782 S-386,782	1983
	AFC-11	Assessment of larval striped bass stocks in Virginia waters (Emergency Striped Bass Research Study)	1980	3	F-226,766 S-113,383	
	AFC-12	Striped bass research, Virginia (Emergency Striped Bass Research Study)	1980	4	F-339,300 S-184,698	
88-309	<u>WASHINGTON</u> 1-154-R	Coastal pink shrimp study	1979	5	F-110,432 S- 36,812	1983
	1-159-R	Coastal groundfish age determination	1981	3	F-103,000 S- 34,351	
	1-167-R	Coastal dungeness crab project	1982	3	F-110,434 S- 36,812	
	1-168-R	Coastal marine fish/shellfish	1982	2	F- 55,024 S- 18,342	
	1-170-R	Coastal marine fish management and stock	1983	3	F-190,082 S- 63,361	
89-304	AFC-84	Development of a spawning gravel cleaning machine	1977	5	F-137,315 S-137,315	1983
	AFC-104	Development of Cedar River sockeye and chinook enhancement facility	1979	5	F-1,255,000 S-1,362,000 (Includes FWS share)	
	AFC-114	Joint Washington-Oregon multi-jurisdictional salmon management program	1981	3	F-1,560,375 S- 780,188	

	AFC-115	Lake Washington simulation model	1981	1	F- 31,390 S- 31,390	1983
	AFC-117	Ocean distribution of northern California and southern Oregon fall chinook	1981	3	F- 65,936 S- 65,936	
	AFC-118	Treaty Indian catch monitoring system	1982	1	F- 73,000 S-184,751	1983
	AFC-119	Puget Sound commercial fishery sampling	1982	1	F- 94,750 S- 94,750	1983
	AFC-120	Coastal freshwater stock assessment	1982	1	F- 30,250 S- 30,250	1983
	<u>WEST VIRGINIA</u>					
88-309	3-372-R	Commercial fishery investigations	1982	5	F- 33,750 S- 11,250	
	3-380-R	Investigation of commercial invertebrate bait harvest	1983	3	F- 19,500 S- 9,453	
	<u>WISCONSIN</u>					
88-309	3-299-R	Quota-controlled chub fishery for Wisconsin waters of Lake Michigan	1978	5	F-101,728 S- 33,907	1983
	3-382-R	Management of a quota controlled commercial chub fishery	1983	4	F-80,000 S-26,664	
89-304	AFC-15	Rehabilitation of Green Bay walleye fishery	1979	4	F-132,500 S-132,500	1983
	AFC-16	Assess walleye populations in Green Bay, Lake Michigan	1983	4	F-161,000 S-161,000	
	<u>WYOMING</u>					
88-309	1-172-R	Commercial fishery development extension services	1983	4	F- 80,000 S- 26,672	

agement cost, State and Federal. If projects were continued or completed in 1983 with prior year funds, cost is indicated below.

Request for additional information about a project or for reprints of reports resulting from the work should be made to the appropriate NMFS Regional Office, State agency, or Cooperator. The Regional Offices, State Agencies, and Cooperators, including addresses are listed on pages 40-43

## AQUACULTURE

Colorado 1-169-R	Stephen A. Flickinger	F- 27 S- 9
<u>Warm water fish culture</u> - Combined rearing of large mouth bass and black crappie.		
Guam 4-58-D	Harry Kami	F- 20 S- 48
<u>Development of polyculture fish farming</u> - Increase efficiency and expand production of local aquaculture farms.		
Hawaii 4-57-D	Takuji Fujimura	F- S-
<u>Seaweed investigations</u> - Develop procedure and determine economic feasibility of reestablishing <u>Gracilaria</u> depleted areas of Hawaii.		
Mississippi 2-376-R	George Passokey	F-61 S-20
<u>Experimental treatment of catfish ponds with algal inhibitors</u> - Evaluate the abundance and diversity of algae associated with off-flavor problems of commercially grown fresh water catfish.		
Nevada 4-60-R	Robert E.L. Taylor	F- 14 S- 4
<u>Production of sterile grass carp</u> - Develop surgical or chemical sterilization methods for grass carp and assess impact of transplanted stocks on aquatic environment.		

## CONSTRUCTION

### FISH SCREENS AND STREAM IMPROVEMENT FACILITIES

Massachusetts AFC-19	Joseph DiCarlo	F- 40 S- 40
<u>Anadromous fisheries management</u> - Maintain and enhance existing populations, restore historically important populations and establish new populations of anadromous fish, through construction of fish passage facilities.		
Rhode Island AFC-2	John Stolgitis	Completed
<u>Fish ladder construction</u> - Construction of fish passage facilities on Forge Road and Potowomut Pond Ditches, Hunts River, and North Kingston-East Greenwich and Bradford Dam on the Pawcatuck River.		

Development of Cedar River sockeye and chinook enhancement facility - Construct a hatchery, rear station, fish ladder and caretaker's facilities on the Cedar River near Landsburg Dam.

### LABORATORIES

Massachusetts 3-218-C

Leigh Bridges

F-

S-

Construction of marine research station - Construct a marine research station which will provide central facilities for personnel now located at several temporary installations on Cape Cod.

### VESSEL

New York 3-347-C

Chester S. Zawacki

Completed 19

Marine research vessel acquisition - Acquire a 35-foot research vessel for sampling New York's marine finfish and crustacean resources.

### COORDINATION

Maine 3-359-S

E. Penn Estabrook

F- 10,4

S- 10,4

Coordination of research and development - Administer Maine's Public Law 88-309 program.

New York 3-346-S

Samuel I. Finkelstein

F- 11,2

S- 11,2

Coordination III - Administer Public Law 88-309 projects.

### DISEASE AND PARASITE CONTROL

Idaho 1-171-R

George Klontz

F- 38,9

S- 13,0

Proliferative kidney disease in rainbow trout - Examine the epidemiology and phytopathology of PKD in Idaho trout hatchery.

Maryland 3-366-D

Rudolph Lukacovic

Completed 19

Fish environmental assessment - Determine distribution and intensity of diseases affecting marine animals (primary focus: molluscan shellfish) in Chesapeake Bay and tributaries by laboratory examination and field observations.

New Jersey 3-364-R

Harold H. Haskin

F- 10,0

S- 3,3

MSX disease and oyster production in Delaware Bay - Provide current information on prevalence and intensity of MSX disease on oyster populations in Delaware Bay with a view toward modification of planting practices to minimize oyster disease losses.

Infectious disease program for salmon and steelhead hatcheries - Monitor fish condition and investigate epizootics to identify pathogens and prescribe control measures.

Utah 1-149-R Charles Berry F- 20,000  
S- 6,400  
Physiological/genetic studies of trout strains in commercial and agency hatcheries - Evaluate rainbow trout strains and rough fish for survival and disease resistance.

## EXTENSION SERVICE

American Samoa 4-46-D Henry Sesepasara Completed 1980

Fisheries technical assistance - Provide training and advisory services to local fishermen.

Delaware 3-358-D Charles A. Lesser F- 29,400  
S- 9,800  
Technical assistance to commercial fisheries - Provide technical assistance to commercial fishermen, seafood industries, and government authorities on management, enforcement, and dissemination of data to improve management and economics of Delaware's commercial fisheries industries.

Florida 2-336-D Sally S. Patrenos F-142,500  
S- 47,500  
Fisheries extension and marketing services program - Initiated extension program designed to teach professional foods people the techniques of fish cookery; proper handling, storing, and preparing fish; and ways to maintain and expand consumer demand for fishery products.

Florida 2-405-D Charles C. Thomas F- 175,000  
S- 58,300

Create and develop educational materials for use in training - Create a greater demand for seafood. Enhance public image of mullet, Spanish mackerel, rock shrimp, shark, croaker, squid, dolphin, etc., introduce and encourage the purchase of same. Provide industry with technical assistance and market development. Increase economic impact to State by increasing new markets throughout the United States.

Maine 3-368-D Frank Spencer F- 24,100  
S- 24,100  
Fisheries technology service - Assist and disseminate information to the fishing industry of Maine on the latest developments in management, harvesting, and processing of renewable marine resources.

Maryland 3-365-D P. William Sieling III Completed 1980

Fisheries technology and advisory services - Facilitate communication between the biological-technical managerial faculty and the producers and processors of fishery products in Maryland.

Massachusetts 3-363-D Susan Faria/H. Arnold Carr F- 91,600  
S- 30,500

Marine fisherman's coordination project - Provide the mechanism for the efficient dissemination of information on commercial fishing technology, legislation and regulations, and results of pertinent scientific investigations to the commercial fishing community and the general public.

New Jersey 3-388-D

John Makal

F- 24,  
S- 8,

Marine fisherman's coordination project - Provide communication pathway between commercial fishermen, processors, dealers, and New Jersey fisheries management agencies; address current concerns and needs of the commercial fishing industry which generates \$170 million to the state's economy.

Wyoming 1-172-R

John Baughman

F- 20,  
S- 6,

Commercial fisheries development extension services - Assist and disseminate to the fishing industry and potential users concerning information on carp, sucker, and bait minnow populations in Wyoming reservoirs and streams.

## MARKET DEVELOPMENT

American Samoa 4-63-D

Henry Sesepasara

F-  
S-

Export Fish Marketing - Provide central coordination for the development of an export market for American Samoa caught fish.

## OPERATION AND MAINTENANCE

New Hampshire AFC-5

Charles F. Thoits III

Completed 1

Operation and maintenance of the Milford hatchery - Provide the personnel, feed, medication, and other activities necessary for the hatching and rearing to smolt size of approximately 500,000 anadromous salmonids.

New Hampshire AFC-6

Peter E. Brezovsky

F- 90,  
S- 90,

Operation and maintenance of the Milford hatchery - Hatch and rear approximately 320,000 anadromous salmonids to accommodate fish cultural needs for the restoration of Atlantic salmon to the Merrimack River basin and to generate a coastal recreational fishery for coho and chinook salmon.

## PLANNING

New Hampshire 3-351-R

Edward Spurr

Completed 1

A comprehensive marine resources strategy - Develop a comprehensive strategy to address commercial fisheries research and development requirements based on an analysis of the major problems and priorities affecting New Hampshire's fisheries.

## RESEARCH

### ENVIRONMENT

#### Marine:

Maine 3-390-D

Walter R. Welch

F-21,15  
S-21,15

Environmental monitoring system renovation - Provide data on marine environmental parameters critical to the assessment of events and biological conditions affecting the commercial fisheries.

#### Estuarine:

Nebraska 2-402-R

Gene Zuerlein

F- 49,08  
S- 16,36

"Nebraska Commercial Fishery Investigations" - To manage the commercial fishery permit system and to compile and analyze the reported production and catch statistics.

#### Freshwater:

Pennsylvania 3-337-R

Delano R. Graff

F-27,66  
S- 9,22

Guidelines for effective management of commercial fish hatchery wastewater treatment systems - Evaluate different types of wastewater treatment systems to assist the commercial fish growers.

Puerto Rico 2-395-R

Jose A. Cardosa

F-270,57  
S- 90,19

Puerto Rico Commercial Fisheries Research & Development Program - (1) Survey shallow water reef fishes in selected areas round the island to determine distribution, abundance, seasonality, and population fluctuations throughout the year cycles of selected commercially important shallow water reef fish populations. (2) Record of fish landings will be made by species and gear in order to provide information on species composition, relative abundance, and gear catch efficiency. Publications, quarterly bulletins and correspondence will be provided to interested persons and agencies for the benefit of the fishing industry. The project will continue to furnish data for inclusion in the annual summary of U.S. Fisheries statistics. (3) To provide with the required routine operations and maintenance for the physical facilities where the Puerto Rico Fisheries Research and Development Program activities are based.

Baitfishes of Colorado - Prepare and publish a manual on identifying, rearing and using the baitfish resources of Colorado.

Utah 1-156-R

Charles Berry

Complete 19

Potential of the Utah chub to support a baitfish industry - Analyse the impact on fishery resources of the Utah chub and determine present and future demand in the baitfish industry in Utah.

Carp:

Illinois 3-383-R

K.S. Lubinski

F- 10,0

S- 3,3

Age structure and analysis of carp populations in the Mississippi and Illinois Rivers - Characterize the age structure of carp populations in selected Mississippi and Illinois River pools to explain recent declines in the number and size of harvested fish.

Walleye:

Michigan AFC-14

Robert Haas

Completed 19

Lake Erie walleye assessment - To determine the distribution and harvest of walleye stocks in western Lake Erie.

Wisconsin AFC-15

Lee Kernan

Completed 19

Rehabilitation of Green Bay walleye fishery - Evaluate success of stocked fingerling and fry walleyes and double the existing standing stock through planting and curtailment of harvest.

Wisconsin AFC-16

Lee Kernan

F- 35,0

S- 35,0

Assess walleye populations in Green Bay, Lake Michigan - Maintain, through a stocking and assessment program, an adult walleye standing stock of at least four per acre in Green Bay, while providing a sustainable commercial harvest of 10,000 pounds or more annually in Lake Michigan.

Whitefish:

Michigan 3-384-R

R.W. Rybicki

F- 19,0

S- 7,0

Assessment of whitefish populations in the treaty area of Lake Michigan - Monitor whitefish harvest in the commercial trapnet fishery, determine relative abundance of pre-recruits, and forecast the total allowable yield of whitefish in the treaty waters of Lake Michigan.

Yellow perch:

Indiana 3-336-R

Thomas S. McComish

Completed 19

Movements of yellow perch in Indiana waters of Lake Michigan - Determine, through tagging, seasonal distribution of yellow perch by size, age, sex, maturity, temperature and depth.

Ecology of yellow perch in Lake Erie - Determine whether management models for yellow perch in Lake Erie can be improved by examining the relative importance of food availability and temperature as factors causing differences in growth rates between western and central basin populations.

Others:

Arkansas 2-371-R Tommie Crawford F-26,40  
S- 8,80

Commercial fishery survey - Gather data and compile information concerning the status of wild commercial fishery resource and evaluate regulations for commercial fishing.

Iowa 2-384-R John G. Nickum F-20,00  
S- 6,66

Habitat associations and movements of shovelnose sturgeon with reference to spawning - Determine the habitats and other physical factors required by shovelnose sturgeons for successful reproduction in order to protect and enhance productivity of this commercial species.

Iowa 2-399-R John C. Nickum F- 20,00  
S- 6,66

To determine the habitats and other physical factors required by shovelnose sturgeon during their first year of life in order to protect and enhance productivity of this commercial species.

Kentucky 2-388-R Robert D. Hoyt F- 20,00  
S- 6,66

Population dynamics and biology of the paddle fish Polydon spathula in Lake Cumberland, KY - Estimate the size of the paddlefish population using mark and recapture methods.

Louisiana 2-394-R William S. Perret F- 240,00  
S- 80,00

Research, Development, and Management of Louisiana's Coastal Fisheries - To complete and maintain network of permanent survey monuments throughout coastal Louisiana for the purpose of surveying oyster leases.

Minnesota 3-344-R John Spurrier F- 20,00  
S- 9,50

Lake Superior commercial fisheries assessment studies - Ascertain and monitor the status of lake trout and commercial fish stocks (lake herring, chubs, smelt) in the Minnesota waters of Lake Superior.

Montana 1-162-R Robert Needham F- 25,33  
S- 6,33

Development and management of commercial fishing practices - Assess the commercial and gamefish species in Fort Peck reservoir.

Commercial fishing gear mortality - Determine the effects of season, area, catch size, and net time on immediate mortality of commercial gear net-released fishes and develop management proposals.

Oklahoma 2-396-2-397 & 2-398 combined.	Harold Namminga	F- 22,031 S- 7,343
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Oklahoma Commercial Fisheries Project; Collect and analyze commercial fishery harvest results ~ To monitor selected fish populations in lakes undergoing commercial harvest in Oklahoma. To evaluate a commercial fishing program on Ft. Gibson Lake by determining composition, size, catch rate, and value of the fish catch and harvest.

Pennsylvania 3-339-R	Roger Kenyon	F- 66,211 S- 22,071
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Lake Erie commercial fishery investigations - Investigate year class fluctuations and early life histories of yellow perch, smelt, drum, whitefish, and walleye.

South Carolina 2-392-R	Bill Anderson	F- 25,301 S- 8,431
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A Biological Evaluation of the Knobbed Whelk Fishery in South Carolina - (1) To determine selected biological characteristics of commercially harvested whelks; (2) To evaluate populations exposed to continued or increased exploitation; and (3) To prepare a written technical report incorporating the findings and data resulting from the project.

South Dakota 1-163-R	David Hamm	Completed 1983
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Bionomics of the rainbow smelt - Monitor the impacts of rainbow smelt population on a developing salmonid sport fishery in Lake Oahe.

South Dakota 1-173-R	David Hamm	F- 30,201 S- 10,061
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An estimate of abundance and distribution of rainbow smelt in Oahe Reservoir using hydroacoustics - Obtain baseline data and develop management methodology.

West Virginia 3-372-R	Fred Leckie	F- 6,751 S- 2,251
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Commercial fishery investigations - Administer and monitor the Ohio River commercial fishery in West Virginia.

Wisconsin 3-299-R	Jim McNelly	Completed 1983
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Quota-controlled chub fishery for Wisconsin waters of Lake Michigan - Continue the State's chub assessment program to evaluate changes in the population to determine allowable harvest.

Wisconsin 3-382-R	Lee Kernen	F- 20,001 S- 6,661
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Management of a quota-controlled commercial chub fishery - Determine the population parameters required to annually calculate harvest quotas for the Lake Michigan commercial chub fishery with the ultimate objective of sustaining a harvest of 4 million pounds per year by 1991.

Maine AFC-21

Clement J. Walton

Completed

Population biology and management of the alewife (*Alosa pseudoharengus*) in Maine - Determine population characteristics and monitor catch, escapement, and production levels of the Damariscotta River alewife stock.

Maine AFC-25

C. J. Walton

F-14

S-14

Population biology of the alewife - Monitor parameters of the Damariscotta River alewife stock and develop a population model to evaluate priorities for alewife management.

Virginia AFC-10

Joseph G. Loesch

F-

S-

Anadromous fisheries research program, Virginia - To collect catch and effort statistics from the Virginia river herring, American shad, and striped bass fisheries and determine indices of juvenile abundance to update the existing data base.

American shad:

Connecticut AFC-13

Victor Crecco

F- 42

S- 42

Population dynamics of American shad in the Connecticut River - Determine levels of commercial fishery effort which furnish the highest sustainable yields and ensure an adequate spawning population; project the size of future spawning runs and gain insight into stock recruitment.

Georgia AFC-18

Ronald J. Essig

Completed

Georgia Commercial shad Assessment - Quantify commercial shad landings, determine catch per unit effort, and analyze data.

Maine AFC-23

Thomas Squiers

F- 40

S- 40

Kennebec River anadromous stock evaluation - Determine relative abundance indices for juvenile alewife and Atlantic salmon. Draft an Anadromous Fish Restoration Plan for the Kennebec River.

Maine AFC-24

Lewis N. Flagg

F- 16

S- 16

Androscoggin River shad restoration, Maine - Restore anadromous fish runs to the Androscoggin River. Determine timing/magnitude/reproductive success of anadromous clupeid runs, and assess upstream passage efficiency.

South Carolina AFC-20

Glenn Ulrich

F- 45

S- 45

Monitoring & Assessment of the South Carolina Commercial Fishery for Shad (FY83) - Collect catch/effort data and determine abundance indices of American Shad for determination of stock status. Monitor age, size and composition of shad on major river systems and in the near-shore, ocean fishery. Collect commercial landings data from the network of outlets. Maintain and expand network of cooperating wholesale and retail outlets marketing shad to provide comprehensive catch data. Compare statistics of shad caught in  $4\frac{1}{2}$  and  $9\frac{1}{2}$  foot lift gill nets. Estimate spawning run by sampling the commercial catch. Investigate hickory shad resource in the Waccamaw-Pee Dee River system, collecting life history.

Brit herring tagging studies - Refine brit tagging methods and assess movement patterns to determine geographical and seasonal contributions of brit to the commercial fishery.

Groundfish:

Alaska 5-49-R

Phil Rigby

Gulf of Alaska - Bering Sea groundfish investigations - Collect landing data for groundfish caught in Alaska. Provide increased reporting accuracy of vessels, catch areas, and species composition, to gain knowledge of the fisheries and status of stocks.

Washington 1-159-R

Mark Pedersen

Coastal groundfish age determination - Collect information for groundfish management plan data base.

Washington 1-170-R

Al Millikan

Coastal marine fish management - Collect and analyze stock assessment data from port samplers, logbooks, and research cruises to implement and monitor the Pacific Fishery Management Council groundfish management plan.

Pacific herring:

Alaska 5-50-R

Stephen M. Fried

Stock assessment of Pacific herring, Bristol Bay, Alaska - Monitor the commercial Pacific herring roe fishery in the vicinity of Togiak Bay, western Alaska. Estimate biomass of spawning herring and commercial fishery exploitation rate. Determine age composition, size, and sexual maturity of herring on the spawning grounds and harvested by the commercial fishery.

Alaska 5-51-R

Dennis Blankenbeckler

Pacific herring research - S.E. Alaska - Monitor the commercial Pacific herring roe fishery in southeastern Alaska. Assess stock abundance with hydroacoustical equipment. Collect data on age, growth, and spawning frequencies. Survey spawning grounds to assess spawning success.

Pacific salmon:

Alaska APC-65

Donald E. Rogers

Chignik sockeye studies - Estimate late season escapements of sockeye salmon into Chignik River, Alaska Peninsula. Determine how prey selection behavior of sockeye salmon juveniles in Chignik affects daily ration as a preliminary step to developing a growth and survival model for sockeye salmon juveniles in the lake.

Alaska APC-67

Philip Gray

Microwire tagging of wild coho salmon stocks - Evaluate and refine management techniques for wild coho salmon stocks in southeast Alaska through coded wire tagging studies.

Alaska AFC-71	Doug Jones	F-115,000 S-164,200
<u>Southeastern Alaska pink and chum salmon studies</u> - Insure optimum escapement of pink and chum salmon spawners into streams of southeast Alaska. Forecast timing, distribution, and magnitude of pink and chum salmon returns. Investigate and define relationships between environmental fluctuations of salmon returns.		
Alaska AFC-72	Scott Marshall	F-136,600 S-291,500
<u>Southeastern Alaska port sampling</u> - Determine migration routes, run timing, relative abundance, and contribution rates based on data obtained from results of coded wire tag recoveries.		
California AFC-16	A.C. Knutson, Jr.	F-362,000 S-362,000
<u>Salmon and steelhead research, management and enhancement</u> - 1) Determine numbers and pounds of commercial salmon landings and the contribution of marked and hatchery reared fish to the fishery. 2) Determine the spawning stock size - recruitment relations for Klamath basin salmon and steelhead.		
Oregon AFC-102	Jim Lichatowich	F-206,100 S-206,100
<u>Research and development of Oregon's coastal fish stocks</u> - Conduct field investigations on fall chinook and coho in the Sixes, Coquille and Elk Rivers.		
Oregon AFC-111	John Harville	F- 65,360 S- 32,680
<u>Regional Mark Processing Center</u> - Operate the Regional Mark Processing Center for identification of salmon stocks tagged, released and recovered in west coast fisheries.		
Oregon AFC-112	Jim Lichatowich	Completed 198
<u>Stock assessment and genetic studies of anadromous fish</u> - Extract, compile, and analyze coded wire tag data to determine ocean survival, distribution and contribution of selected hatchery and wild stocks.		
Oregon AFC-113	Steve Lewis	F-287,070 S-143,530
<u>Joint Oregon-Washington multijurisdictional salmon management program</u> - Tag hatchery and wild stocks monitor the commercial and recreational ocean salmon catch at all Oregon landing ports, recover tagged fish remove and decode tags and enter information in agency computers.		
Oregon AFC-117	John Harville	F- 36,930 S- 36,930
<u>Assessment of the ocean distribution and contribution of northern California and southern Oregon fall chinook stocks</u> - Initiate a logbook program and a concentrated tag recovery effort for depressed Klamath River fall chinook stocks in response to management needs of the Pacific Fishery Management Council.		
Oregon AFC-121	Robert T. Gunsolus	Completed 198
<u>Management of the troll salmon fishery</u> - Troll salmon landings will be sampled, tabulated and analyzed for formulating management options to achieve optimum benefits from the ocean salmon resource.		
Oregon AFC-122	Jim Lichatowich	Completed 198

Washington AFC-83	Harold Lutz	Completed
<u>Evaluation and development of techniques for salmon and steelhead culture</u> - Microbiological and nutritional studies will be conducted at selected state hatcheries.		
Washington AFC-84	Gary C. Bailey	Completed
<u>Development of a spawning gravel cleaning machine</u> - Develop a machine for removal of detrimental materials in natural salmon spawning beds.		
Washington AFC-114	Lee Blankenship	F-523, S-261,
<u>Joint Washington-Oregon multi-jurisdictional salmon management program</u> - Tag hatchery and wild stocks, monitor the commercial and recreational ocean salmon catch at Washington landing ports, recover tagged fish, remove and decode tags and enter information in agency computers.		
Washington AFC-115	Steve Schroder	Completed
<u>Lake Washington simulation model</u> - Determine by simulation modelling, the effects of implanting trout and various fishery management techniques upon sockeye, chinook, and coho that utilize the Lake Washington watershed.		
Washington AFC-117	John Harville	F- 36 S- 36
<u>Ocean distribution of northern California and southern Oregon fall chinook</u> - Initiate a logbook program and concentrated tag recovery effort for depressed Klamath River fall chinook stocks.		
Washington AFC-118	Gary Graves-Northwest Indian Fisheries Commission	Completed
<u>Treaty Indian catch monitoring system</u> - Establish and maintain a computerized record of salmon catch in Western Washington Treaty Tribes.		
Washington AFC-119	Paul Sekulich	Completed
<u>Puget Sound commercial fishery sampling</u> - Collect catch data from the Puget Sound net fisheries.		
Washington AFC-120	Bill Wood	Completed
<u>Coastal freshwater stock assessment</u> - Conduct spawning surveys for estimating juvenile production in major Washington watersheds between Grays Harbor and the Quillayute River.		
<u>Striped bass:</u>		
Alabama AFCS-12	R. Vernon Minton	Completed
<u>Striped bass production and stocking experiments in Alabama coastal areas (Study No. 2)</u> - To reestablish striped bass fishery in Alabama by aquaculture and release of fingerlings.		
Alabama AFC-13	Wayne Shell	Completed

AFC-23

Walter M. Tatum

F- 106,560

S- 53,280

striped bass eggs or sac fry to phase I size fingerlings for stocking hatchery ponds and to produce fingerlings 20g or larger for tagging and stocking. Harvest, mark and stock equally Phase II striped fingerlings into coastal streams. To monitor and assess the effects of past and present stocking of fingerlings.

AFC-11

W.R. Carter

F- 20,000

S- 10,000

egg research, Maryland - To estimate striped bass egg and larval distribution and abundance in the estuary.

AFC-13

Edward D. Houde

Completed 1983

fishery enhancement investigations - Determine relative viabilities and potential for growth of larvae originating from adult stock spawning in three areas of Chesapeake Bay, and develop hatchery stocks to aid in population assessment of wild populations.

Massachusetts AFC-18

Randall Fairbanks

F- 20,000

S- 2,222

evaluation of Massachusetts commercial striped bass landings - Determine age and sex by season and commercially caught striped bass in Massachusetts waters.

AFC-7

Thomas D. McIlwain

Completed 1983

restoration program - Mississippi Gulf Coast - Stock South Carolina striped bass in the Biloxi Bay to establish a strain which will use the coastal streams, estuaries, and open Gulf of Mexico waters.

NY AFC-5

Peter J. Himchak

Completed 1983

of the status of the striped bass population in New Jersey - Estimate recruitment of young-of-year to the state fishery and characterize by age, sex and size the striped bass fishery in New Jersey

NY AFC-6

Peter J. Himchak

F- 20,000

S- 10,000

of the status of the striped bass population in New Jersey - Monitor striped bass recruitment in Raritan River, identify nursery habitat, and characterize landings in the recreational fishery.

AFC-11

Robert E. Brandt

F- 21,000

S- 10,484

and management of striped bass in New York waters - To provide useful and vitally needed information for development of interim regulations for striped bass conservation and management in state

study striped bass production in the Hudson River to provide indices of year class and growth.

North Carolina AFC-18 Michael W. Street F- 24  
S- 12,  
an investigation of size, age, and sex of North Carolina striped bass - To determine size, age, and sex of  
striped bass found in the Roanoke River, Albemarle Sound and the Atlantic ocean off North Carolina.

North Carolina AFC-19 Michael W. Street F- 34,  
S- 34,  
Roanoke River striped bass investigation - Estimate the magnitude of the spawning population by the mark  
recapture method; determine exploitation rate of different harvest methods. Estimate the commercial and  
recreational harvest of striped bass in Roanoke River and the fishing effort expended. Estimate the relative  
number of striped bass eggs spawned in the major spawning area. Determine if relationships can be  
demonstrated among various environmental factors and relative abundance of striped bass in Roanoke River  
and Albemarle Sound.

North Carolina AFCS-22 Sara E. Winalow F- 80,  
S- 80,  
to obtain information needed to manage the fishery for shads and river herring in North Carolina. To obtain  
information on striped bass and determine the effects of stocking juvenile striped bass on natural coastal  
striped bass populations and on the striped bass fisheries.

Rhode Island AFC-4 John F. O'Brien F- 20,  
S- 10,  
striped bass stock assessment in Rhode Island waters - Characterize the composition of Rhode Island striped  
bass commercial landings to help assess the current status of coastal stocks and determine the level of  
exploitation by various fisheries.

Virginia AFC-11 George C. Grant Completed  
assessment of larval striped bass stocks in Virginia waters - To estimate striped bass egg and larval  
abundance and distribution in the York River system.

Virginia AFC-12 Robert K. Dias F-75  
S-37  
striped bass research, Virginia - To establish relative numbers of juvenile striped bass and identify cohabiting  
species in the James, York, and Rappahannock River systems.

fishers:

Alabama 2-391-R Walter M. Tatum F- 119  
S- 39  
Research and Management of Alabama Coastal Fisheries - Project (1) Monitor the abundance of post larval  
larval, juvenile and adult shrimp, fish, crabs and oysters; assess and monitor stages of penaeid shrimp,  
crab and fish, in Alabama waters and recommend harvest and management regulations.

Project (2) to review and appraise the environmental degradation potential or possible benefits arising from  
proposed construction and development in coastal Alabama. Develop public awareness of importances of  
estuarine area and its related eco system of the coastal fisheries resources.

PVC Pipes Bottomfish Longlining - Determine the effectiveness of a new longlining method in American Samoa Waters.

California 4-59-D.

Richard Klingbeil

F-

S-

Fisheries monitoring and assessment program - Monitoring, assessment, and evaluation of the commercial fisheries of Southern California.

California 4-62-D

Michael Herder

F- 240,0

S- 80,0

Southern California Commercial Fisheries Assessment - Monitoring of fresh fish markets and assessment of interactions between the drift gill net shark and swordfish fishery and marine mammals.

Florida 2-341-R

Karen Steidinger

F- 78,0

S- 26,0

Florida's marine resources research, development, and management program - Project 1: establish population and catch information for the management of selected marine vertebrate and invertebrate species. Project 2: Establish life history information for the management of marine fisheries. Project 3: Establish and refine aquaculture techniques for spawning and rearing of Macrobrachium.

Florida 2-408-R

Karen Steidinger

F- 100,0

S- 33,0

Determine size composition and movements of blue crab in Apalachee Bay, Charlotte Harbor and 10,000 islands. Determine handedness, claw breakage and regeneration of stone crabs harvested by Florida west coast fishermen. Determine genetic identity of various stocks of red drum to assess the hypothesis of multiple isolated populations. Determine age, growth, reproduction, etc., for groupers; and effects of current fishery practices of sublegal spiny lobsters.

Maine 3-378-R

David B. Sampson

F- 51,0

S- 51,0

Early life histories of commercial shrimp and fishes - Study relationship between growth and survival of larval shrimp and fishes and the abundance and quality of other planktonic organisms; also, assess recruitment of juvenile groundfish from inshore concentrations to offshore adult populations.

Maryland AFC-10

C.J. O'Dell

Completed 19

Survey and inventory of anadromous fish spawning areas - To determine which streams in the Patuxent River basin support spawning migrations of anadromous and estuarine fish and to identify species and spawning areas.

Maryland AFC-14

C.J. O'Dell

F- 74,0

S- 74,0

Coastwide fishery resource assessment - Determine species composition and abundance of fish populations in coastal Massachusetts waters.

Massachusetts 3-375-R

Arnold B. Howe

Massachusetts fishery resource assessment - Collect information on abundance, distribution, composition of the fishery stocks in Massachusetts coastal waters to provide essential data for marine fishery resources in territorial waters and the Fishery Conservation Zone.

New Jersey 3-367-R

Paul G. Scarlett

Life history investigations of marine fisheries - Determine migrations, seasonal movements, identification of winter flounder and blue crabs from selected New Jersey estuaries, and distribution of flounder harvest between commercial and recreational fishermen.

North Carolina 2-386-R

Michael W. Street

Assessment of North Carolina commercial finfisheries: Project I: Determine relative abundances, species composition, distribution and migration of species in the long haul and pound net fisheries in Pamlico Sound area and the winter trawl fishery in the territorial sea. Project II: Determine the populations of Atlantic croaker in an area between Chesapeake Bay and South Carolina. To determine degree of intermixing of populations in this area. Project III: Obtain data on migration and identification of Micropogonias undulatus.

North Carolina AFCS-16

Michael W. Street

North Carolina anadromous fisheries management program - Collect, analyze, and report information on North Carolina anadromous fisheries for use in management of the fisheries and eventual preparation of management plans.

Oregon 1-151-R

Robert Demory

Comp

Groundfish and shrimp assessment - Collect and analyze fishery and research data to determine yield, catch per unit effort, and mortality rates.

Rhode Island 3-376-R

Timothy R. Lynch

Coastal fishery resource assessment - Collect fishery statistical data for the development of resource indices for commercial stocks in Rhode Island coastal waters needed for designing management plans for State and Federal waters which are responsive to year class fluctuations and the dynamics of the fisheries.

Trust Territory 4-55-D

Michael C. White

Truk Lagoon small purse seine demonstration - Development of small purse seine for harvesting small fish in Truk Lagoon.

Virgin Islands 2-335-R

Ralf H. Boulton

6-D	Dave Roe	F- 0 S- 0
<u>and relative abundance of freshwater clams - Stock assessment of <i>Corbicula</i> sp. of the Colorado</u>		
1-167-R	Tom Northup	F- 37,002 S- 12,334
<u>greenness crab project - Sample crab at canneries and landings ports to collect management data.</u>		
3-374-R	Mark Blake	F- 20,000 S- 20,700
<u>lobster investigations - Study adult population characteristics, reproductive abnormalities, larval and juvenile abundance of American lobster in Long Island Sound.</u>		
D-R	James C. Thomas	F- 97,372 S- 97,372
<u>stock assessment - Monitor current and previous biological and socio-economic conditions in Maine's</u> ery, increase precision of population parameters, and study interaction of spawning stock size, egg and nursery areas, to resultant recruitment into the commercial harvest.		
-357-R	Phillip T. Briggs	F- 7,840 S- 7,840
<u>n of the American lobster in eastern Long Island Sound - Assess the size composition, sex ratios,</u> urity, movements, mortality rates and incremental growth of American lobsters in eastern Long .		
7-R	Richard E. Sparks	Completed 1983
<u>three commercial harvesting methods on mussel beds - Determine immediate and long-term</u> harvesting methods on Mississippi River mussel beds.		
3-R	Richard E. Sparks	F- 10,000 S- 3,333
<u>fleeing areas on mussel beds - Determine effects of a new river terminal and barge fleeing area</u> mussel bed in the Illinois River.		
-373-R	John Condor	F- 20,047 S- 6,682

Florida 2-370-D Lawrence Sangaree F- 19  
S- 6  
Oyster cultivation by reef construction - Develop techniques to enable oystermen to increase commercial production.

Florida 2-407-D Lawrence Sangaree F- 100  
S- 33  
Construct approximately 22 to 27 acres of new oyster reefs for the cultivation of oysters. Enhance commercial production by moving live coon oysters out of overcrowded, shallow water areas.

Maryland 3-367-R George Krantz F- 4  
S- 4  
Monitoring and research of lethal oyster diseases in Chesapeake Bay - Define the extent of recent oyster mortalities in Chesapeake Bay and determine factors responsible for reductions up to 40-percent in yield of marketable oysters in producing areas during the 1982-1983 season.

Virginia 3-377-D VMRC staff F- 30  
S- 10  
Development of oyster resources - Plant oyster cultch to increase the production of Virginia's commercial oyster industry which contributes in excess of \$40 million annually to the State's economy.

Shrimp:  
Washington 1-154-R Tom Northup Completed  
Coastal pink shrimp study - Conduct survey cruises and monitor coastal pink shrimp landings to collect biological information needs for management under the MFCMA.

Shrimpers:  
Georgia 2-379-R Susan Shipman Completed  
Studies and assessment of Georgia's marine fishery resources - Project I: Determine the seasonal abundance, size ranges and sexual maturity of penaeid shrimp and blue crabs in selected estuarine and coastal waters of coastal Georgia, assess various environmental parameters which may affect penaeid shrimp and blue crab populations and availability for harvest, and determine the seasonal and length frequency of coastal finfishes including but not limited to spotted sea trout (Cynoscion nebulosus), summer trouthead (Morone chrysops), spot (Leiostomus xanthurus), southern kingfish (Menticirrhus americanus), gulf kingfish (M. litor), croaker (Micropogon undulatus), black drum (Pogonias cromis), red drum (Sciaenops ocellata), summer flounder (Paralichthys dentatus), and winter flounder (P. lethostigma). Project II: Determine the major coastal Georgia which harbor high populations of juvenile penaeid shrimp, blue crabs, and coastal finfish. Project III: Define the physical and chemical environmental parameters associated with these areas. Project IV: Determine movement and growth of commercially important penaeid shrimp in estuarine and coastal waters along the Georgia coast.

Georgia 2-390-R Susan Shipman F- 60  
S- 20  
Monitor penaeid shrimp and blue crab populations in coastal Georgia estuaries in order to provide managers with timely information for decision making and to increase the data base of knowledge relative to selected aspects of the life histories of Georgia's major coastal finfishes and shellfish.

Louisiana 2-381-R Philip Broman Completed  
Monitoring and assessment activities in Louisiana's coastal waters - Monitor shrimp and ground crab populations in Louisiana's territorial waters, monitor hydrological conditions associated with biological samples in Louisiana's territorial waters, and correlate hydrological conditions in the territorial waters with biological data collected in the trawl samples.

marketable, spawnable oysters, incidence of diseases and predators.

Mississippi A FCS-24

Larry C. Nicholson

F- 61,00

S- 30,50

Mississippi/Alabama Cooperative Striped Bass Restoration Program - Restore the striped bass population in the Gulf of Mexico Coastal area of the states of Alabama and Mississippi by annual stocking of advanced striped bass fingerlings.

New Jersey 3-332-R

Thomas McCloy

F- 42,30

S- 42,30

Inventory of New Jersey's estuarine shellfish resources - Inventory estuarine shellfish resource and monitor annual recruitment of hard clams and oysters, evaluate efficacy of hard clam relay program.

New York 3-355-D

Stephen A. Hendrickson

F- 52,00

S- 52,00

Shellfish resource promotion - Transplant shellfish from polluted to clean waters for cleansing, introduce sexually mature shellfish to increase reproduction potential, and control grow-out and release of sub-legal size shellfish into selected New York waters for future harvesting.

New York 3-356-R

Richard E. Fox

F- 13,14

S- 13,14

Assessment of New York's shellfish resources II - Provide shellfish population density and distribution information and descriptions of shellfish industry participation to serve the needs of State and local government resource managers.

New York 3-360-D

John Hofmann

F- 28,00

S- 28,00

Shellfish sanitation control utilizing mobile laboratories III - Utilize mobile laboratories to maintain sanitary surveillance of shellfish harvest areas and processors.

Texas 2-385-R

Terry J. Cody

Completed 198

Texas commercial fisheries management program - Determine the status of shrimp populations in Texas bays to assist the Texas Legislature in formulating shrimping regulations. Monitor sampling stations to determine trends in shrimp relative abundance and size. Recommend opening and closing seasons. Determine flexible seasons for the harvest of white shrimp in bays and the Gulf of Mexico as an alternative for the current fixed seasons. Prepare an annual report (assessment) of study results and management recommendations.

Washington 1-168-R

Dennis Tufts

F- 5,63

S- 1,88

South coast marine fish/shellfish monitoring - Collect landings and biological data on groundfish, shrimp, and clams for improved resource management.

West Virginia 3-380-R

Donald J. Orth

F- 19,50

S- 9,45

Investigation of commercial invertebrate bait harvest in the New River, West Virginia - Determine the extent and nature of commercial bait harvesting of crayfish in the New River and evaluate impacts of the present and anticipated commercial harvest on sport fish populations.

ansas 2-389-R Jim Stephens F- 20,  
S- 6,  
ansas commercial fisheries statistics - Determine the annual commercial harvest or production and value of species resulting from both the wild fishery and aquaculture industries.

ansas 2-401-R Jim Stephens F- 20,  
S- 6,  
ansas Marketable Fisheries Investigation - Collect and report aquatic statistics on an annual basis to determine and apply approaches necessary for management recommendations. Provide scientific and informational base to manage commercial aquatic resources. Prepare report of marketable investigation.

aryland 3-345-D John R. Williams F- 74,  
S- 286,  
aryland fisheries statistics - Maintain a comprehensive catch reporting system for Maryland commercial fisheries.

assachusetts 3-371-D Charles O. Anderson, Jr. F- 78,  
S- 35,  
ollection, compilation, evaluation, and dissemination of Massachusetts fishery statistics - Collect and analyze commercial fisheries landings data, and establish an FDP center to assist in program evaluation.

Missouri 2-363-R John W. Robinson F- 20,  
S- 6,  
esearch and management of Missouri's commercial fisheries resources - Determine the number of commercial fishermen, pounds of fish harvested, and the wholesale value for Missouri's River commercial fisheries. Project I: Missouri's commercial fishery harvest - To determine the number of commercial fishermen, pounds of fish harvested, and the wholesale value for Missouri's river commercial fisheries. Project II: Maintenance, enhancement, and evaluation of commercial fisheries habitat created in the Missouri and Mississippi River through agency coordination - To preserve and enhance Missouri's commercial fisheries by motivating the various construction agencies to preserve and restore fish habitat in future and on-going projects and to assist in evaluating these efforts. Project III: The development of a qualitative system to evaluate Missouri's commercial fish populations - To select population parameters and establish acceptable levels of each which would provide a qualitative method of assessing the status of important commercial species populations such as carp, buffalo, sp., catfish sp., and freshwater drum in the Missouri River and determine the most effective sampling methods and techniques to obtain a representative sample of those populations.

braska 2-359-R Larry A. Witt F- 2,  
S-  
opulation estimates of Missouri River fishes - Use mark-recapture data to estimate populations.

braska 2-360-R Monte Madsen F- 8,  
S- 2,  
land commercial fisheries investigations - Monitor activities of the commercial fishermen and collect data on harvested species.

ew Hampshire 3-343-D Leigh R. Welcome Completed  
atistical data acquisition for the marine fisheries of New Hampshire - Develop and implement a catch effort statistical collection system for the finfish and lobster commercial fisheries of New Hampshire.

ew Hampshire 3-381-D Leigh R. Welcome F- 50,  
S- 16,

Northern Marianas 4-66-D

Nicolas Guerrero

F-  
S-

Fisheries data collection program II - Implementation of the CNMI data collection system.

Trust Territory 4-54-D

Toshiro Paulis

Complete

Palau reef fish production - Development of baseline information on Palau's fisheries.

Virginia 3-361-D

Paul J. Anninos

F-1  
S-

Commercial finfishery and shellfishery statistical collection - Continue efforts in the collection of Virginia commercial finfish and shellfish catch statistics and harvester employment information.

intra- and interstate fisheries. Since the passage of the Magnuson Fishery Conservation Management Act of 1976, however, the percentage of the Federal funds directed at State-Federal management of fisheries which fall under the purview of that act has approximately 60 percent. The following regional highlights describe the contribution programs make to the management of the commercial and anadromous fisheries of the United States.

## NORTHEAST REGION

The following summary addresses the recent study accomplishments and state research projects funded under the Grant-In-Aid Program in the Northeast Region. They have been selected to signify some of the myriad contributions and benefits of research conducted under P.L. 88-309 and P.L. 89-304 to the management and conservation of commercial and anadromous fishery resources.

The lobster fishery in Maine is ranked first in terms of dollar value (\$44.5 million in 1981) and second in weight landed (22.6 million pounds) of all the commercial fisheries harvested in the state. The Department of Marine Resources, since 1965, has utilized P.L. 88-309 funds to accommodate research priorities pertaining to this valuable resource: the biological and socio-economic data base essential for the formulation of management strategies. Current project emphasis is being directed toward determining stock-recruitment relationships, evaluation of population mortality parameters, and characterization of the commercial landings. In 1983, project personnel published a year (1967-1981) summary report concerning catch and effort information relative to the commercial lobster industry, which has significant importance to lobster researchers and managers in both the United States and Canada. Also, project results have provided input into the development of a Fishery Management Plan for American lobster prepared by the England Fishery Management Council under the auspices of the Magnuson Fishery Conservation Management Act of 1976.

Under P.L. 89-304, the New York State Division of Marine Resources has been conducting investigations since 1973 on striped bass movements, migration, population structure, and annual indices of juvenile abundance in the Hudson River. For this species, the value of the state's commercial (ex-vessel dollar amount based upon 1981 reported value) and recreational (extrapolated from the 1979 Marine Recreational Fishery Survey) fisheries is estimated at \$1.4 and \$3.1 million, respectively. The study, which complements similar studies being performed by other Northeast and Southeast regional states under the emergency provisions (Section 7) of the Anadromous Fish Conservation Act, assures the collection of long-term data base with which to help assess the effectiveness of recently enacted measures adopted by several Atlantic coastal states in response to an overall decline in striped bass abundance. The project also provides critical information for monitoring the Hudson River stock, a research priority identified by the Interstate Fishery Management Plan. Ongoing and anticipated project objectives include the characterization of recreational and Long Island commercial net fisheries, continuation of the young-of-the-year abundance survey, and estimation of the Hudson River spawning stock contribution to regional landings.

In 1983, a final report was completed for a P.L. 88-309 study on the management of unionid mollusks populations in southeastern Ohio's Muskingum River, which has been recognized as a major producer of freshwater mussels. This project, subcontracted

of 38 existing (freshshells) and 10 recent/historic (weathered or subfossil shells) taxa compared to the 63 taxa of record. Several of the historic beds were found to no longer exist. Those areas which were determined to have potential commercial value were intensively sampled to evaluate species composition, density, and recruitment. From this study, recommendations were made concerning the retention of resource sanctuaries, commercial fishing methods, and season/size harvesting restrictions.

In Virginia, commercial landings of American shad and river herring (alosiids) have drastically diminished in comparison to historical levels (e.g. for shad, 4,990 metric tons in 1896 vs. an estimated 200 metric tons in 1981) and have continued to show a general decline during the last decade. A concern over the decreased abundance of east coast alosid stocks, particularly in and south of the Chesapeake Bay region, was expressed by state and federal fishery scientists and administrators at a 1982 workshop held by the Atlantic States Marine Fisheries Commission. During this meeting, an Action Plan for shad and river herring was unanimously adopted under the auspices of the Interstate Fisheries Management Program. Continuation of activities conducted under P.L. 89-304 by the Virginia Institute of Marine Science is responding to several of the research concerns identified in this Action Plan. Specifically, project personnel collect and compile data regarding commercial catch statistics, monitor annual indices of juvenile abundance, and estimate the survival parameters and year class strength of Virginia's alosid stocks. This information, along with that resulting from similar P.L. 89-304 studies in Connecticut, Maryland, and Maine, will provide a valuable contribution to the total data base that will be necessary to assist in the formulation of appropriate management strategies for the east coast Alosa stocks.

As made evident by these representative studies, the nature of the work performed under Grant-In-Aid Program has increasingly become dependent upon close coordination and communications between state and federal agencies, educational institutions, the commercial and recreational fishing industries, and other interests in the public and private sectors. The continuing commitment of the Northeast Region is to promote, whenever possible, an enhanced awareness and visibility of program accomplishments which are of mutual benefit to both marine and inland fishery sciences.

## SOUTHEAST REGION

The 17 states, the Commonwealth of Puerto Rico and the U.S. Virgin Islands that constitute the Southeast Region represent a great diversity of fishery populations. This Region is one of the greatest producers of commercial and recreational fishery resources for the benefit of the nation. In 1983, the Southeast Region continued to maintain abundant commercial fishery resources for the benefit of users. The \$1.8 million in P.L. 88-309 and P.L. 89-304 allocations to the states of the Southeast Region were expended to support the management of marine and freshwater fishery resources valued at over \$2.5 billion.

The inland states continued P.L. 88-309 projects for the enhancement and management of stream and reservoir commercial fisheries. Kentucky, Nebraska, Missouri, Arkansas, Oklahoma, and Kansas monitored commercial fisheries in streams and/or reservoirs to identify and implement commercial fisheries management measures. New Mexico tested methods for mass-harvesting for

The information was also important in developing, implementing and evaluating fishery management plans of the South Atlantic, the Caribbean, and Gulf of Mexico Fishery Management Councils. Gulf of Mexico states utilized P.L. 88-309 projects to monitor the ecology of king mackerel, spiny lobster, stone crab, shrimp and other finfish. The Gulf states also intensified State/Federal Cooperative program with the Southeast Center, National Marine Fisheries Service for the development of a Gulf-wide Area Monitoring and Assessment Program (SEAMAP). The focus has continued the monitoring of Penaeid shrimp to support the management of this valuable fishery throughout the Gulf of Mexico.

The South Atlantic states continue fishery resource monitoring activities in support of Territorial Sea and U.S. Fishery Conservation Zone fishery program. Georgia is conducting research and assessment of shrimp and finfish. North Carolina implemented flounder and Atlantic croaker tagging life history investigation and continues finfish assessment work. South Carolina initiated a biological assessment of the knobbed whelk fishery. All of these P.L. 88-309 activities are adding important data for the management of interjurisdictional fisheries in the Territorial Sea and U.S. Fishery Conservation Zone.

The U.S. Virgin Islands and the Commonwealth of Puerto Rico continue to gather information on reef fisheries. Spiny lobster, finfish and shellfish fisheries were monitored to provide data for management in conjunction with the Caribbean Fishery Management Council. Both Puerto Rico and the U.S. Virgin Islands conduct programs to determine the weight and value of commercial fisheries landings.

Alabama, Mississippi, South Carolina, North Carolina and Auburn (Alabama) Universities participated in the Anadromous Fish Conservation program (P.L. 89-304) in 1983. Alabama and Mississippi entered into a cooperative striped bass program with NMFS and the U.S. Fish and Wildlife Service to restore coastal striped bass populations to their historic levels. Populations of striped bass are now becoming abundant and a recreational fishery for "stripes" has developed in both states. North Carolina and South Carolina continue to monitor anadromous fisheries to determine their status, harvest and abundance. These data provide a basis for State and interjurisdictional fishery management programs for anadromous fisheries in the Southeast Region.

#### NORTHWEST REGION

In FY83, the nine states comprising the Northwest Region received \$375,000 under the Commercial Fisheries Research and Development Act (P.L. 88-309) and \$1,181,550 under the Anadromous Fish Conservation Act (P.L. 89-304). One-third of the Regional P.L. 88-309 allocation supported projects for the fisheries agencies of the seven inland states, Colorado, Idaho, Montana, North Dakota, South Dakota, Utah and Wyoming. The balance of appropriated funds supported Oregon and Washington projects vital to the management of the major commercial fisheries of the Northwest - salmon, groundfish, pink shrimp and Dungeness crab.

P.L. 88-309 supported programs on the inland waters in FY83 were evenly divided between those contributing to improved harvest management strategies in large mainstem reservoirs, those contributing information needed to develop or maintain successful fish culture efforts and due to the uncertainties of funding, few new, multiyear projects were initiated in 1983.

Seventy-two percent of P.L. 88-309 funds provided to Washington and Oregon were utilized for regional pink shrimp and groundfish stock assessment studies, and for catch data collection. The Pink Shrimp Management Plan developed by the Pacific Fishery Management Council (PFMC) serves as the basis for coastwide management of the shrimp fishery through a multisector cooperative effort. The PFMC Groundfish Management Plan has been in effect coastwide since 1982. Sampling and biological data collection activities are required for the continuing updating of the data base for both pink shrimp and groundfish, and receive major support from P.L. 88-309 funds.

The remainder of "309" funds available to the coastal states (28%) was utilized in projects responsive to specific state management needs. Washington continued monitoring the condition of Dungeness crab for regulation of the crab fishery. Oregon developed a population, catch, and harvest gear information retrieval and analysis system for the weathervane scallop which was updated through a continuing logbook program. Data collected was used to alleviate conflicts between crab and scallop harvesters. Distribution data collected in this program was used by the Corps of Engineers to reduce the impact of dredge disposal near the mouth of Coos Bay. Shellfish data collected in previous years' programs supported in part by CFRD funds continues to be useful. A substantial data base on Oregon subtidal clam populations in Tillamook and Coos Bays contributed significantly to an EPA study of water quality in these areas, and was used by coastal resource agencies and county planners to establish shellfish harvesting guidelines.

Historically, the Pacific Salmon fishery is the largest, most complex and controversial fishery in the Northwest. Problems are caused by dwindling coho and chinook stocks, a highly mobile and overcapitalized commercial fishing fleet, treaty obligations, and the necessary interaction of a myriad of state, Federal, and Tribal management entities. The ocean fishery has been regulated and coordinated under a Pacific Fishery Management Council FMP amendment since 1978. Management of mixed stocks, some of which are more depleted than others, requires continuous monitoring of the catch to meet escapement and allocation goals. As data needs become more critical, P.L. 89-304 program emphasis has moved sharply away from enhancement techniques and basic research.

In 1983, 5% of the Region's P.L. 89-304 funds were applied to research on hatchery techniques in the coastal states. Fourteen per cent of the funds available were utilized for monitoring the natural and artificial production of chinook and coho in Oregon and Washington coastal streams, 20% of the funds were used to conduct spawning surveys for escapement estimates, and the balance, 61%, was utilized for coded wire tagging, sampling of the ocean recreational and commercial fisheries, recovery and processing of tags and data entry in microcomputers. Operation of the Pacific Marine Fishery Commission's Regional Mark Processing Center (RMPC) is accomplished with P.L. 89-304 funds. The RMPC compiles CWT data collected coastwide and distributes the CWT and Mark list to users from California to Alaska. Thus the region's program makes a very significant contribution of essential information for in-season and between-season management decisions by the Pacific Fishery Management Council, and the state fisheries agencies.

A similar data collection project was completed in the Commonwealth of the Northern Mariana Islands, and a second phase to the project was approved for 1984. Two survey instruments were developed in the Marianas project, a fishing log book for commercial fishermen and a sales data form for documenting commercial sales in the markets. The Commonwealth now is getting a more accurate picture of species composition, species seasonality, as well as cost and earnings statistics for the commercial fishery in the area.

The fisheries upon which the western Pacific island areas depend are small in quantity and value when compared to most fisheries of the continental United States; however, the importance of fish to the individual in many of these areas is large. Palau made a preliminary estimate that the average consumption of fish per individual was .85 pounds per day. As a result, effective management of the local resources is critical and the development of an information collection system in the two areas is an essential first step.

Data collection methods must be tailored to conditions in each area, but an exchange of data between areas also is important. Although the regional grant program has provided funds for the two projects, the Honolulu Laboratory has provided the expertise needed to incorporate fisheries data into the Western Pacific Fishery Information Network, the system designed for the access and exchange of computerized fisheries data bases.

In 1983, the Southwest Region grant program also provided funds to the Arizona Game and Fish Department for the completion of a fish disease diagnostic laboratory. The U.S. Fish and Wildlife Service, which provided diagnostic services to public and private hatcheries in the West, closed its laboratory in 1983 and no private laboratory exists in the State. Under State law the Department is responsible for disease inspection of all private fish facilities. The new laboratory will enable the State to maintain control of disease problems in the State by providing services to public and private hatcheries, as well as permit efficient inspection of fish imported into the State. The laboratory also will enable the State to initiate research to determine the cause of the persistent disease problems in State waters.

#### ALASKA REGION

In FY 1983, the Alaska Region received \$502,850 under the Anadromous Fish Conservation Act (P.L. 89-304) and \$240,000 under the Commercial Fisheries Research and Development Act (P.L. 90-199). The Region apportioned \$472,800 of P.L. 89-304 money to the Alaska Department of Fish and Game (ADF&G) and \$30,000 to the University of Washington's Fishery Research Institute for research projects directed at the management of certain segments of Alaska's commercial fisheries. These segments, which include fisheries for sockeye, pink, chum, and coho salmon in the Pacific herring in Southeast Alaska, sockeye salmon in the Alaska Peninsula, groundfish in the Bering Sea and Gulf of Alaska, and Pacific herring in the Bering Sea, had a total 1983 value to the fishermen that is likely to exceed \$100 million.

Four of these projects are contributing to the data base required by the Magnuson Fishery Conservation and Management Act (MFCMA) for the development and maintenance of fishery management plans by the North Pacific Fishery Management Council (Council) and for inseason

Two P.L. 88-309 projects have been directed at the collection and analysis of and effort data from groundfish fisheries in the Gulf of Alaska and the Bering Sea and Pacific herring fishery in the Bering Sea. Data from the fisheries are used to determine catches and current stock conditions. Inseason management decisions by NMFS and ADF&G are based on these determinations. Data from the groundfish fisheries contribute directly to the development of fishery management plans. Data from the herring fishery contributed to develop a fishery management plan, that was adopted by the Council in 1983, to manage an offshore herring fishery.

	and Natural Resources	Building 64 North Union Street Montgomery 36130
	Auburn University, Fisheries Department	Swingle Hall Auburn 36830
American Samoa	Office of Marine Resources Government of American Samoa	Pago Pago 96799
Alaska	Department of Fish & Game	Box 3-2000 Juneau 99802
Arizona	Game and Fish Department	2222 West Greenway Phoenix, 85023
Arkansas	Game and Fish Commission	2 Natural Resources Bldg. Markham & F-430 Little Rock 72205
California	Department of Fish & Game The Resources Agency	1416 Ninth Street Sacramento 95814
Colorado	Division of Wildlife Department of Natural Resources	6060 Broadway Denver 80216
Connecticut	Preservation & Conservation Division, Department of Environmental Protection	State Office Building 165 Capitol Avenue Hartford 06115
Delaware	Division of Fish and Wildlife Department of Natural Resources & Environmental Control	P.O. Box 1401 Dover 19901
Florida	Department of Natural Resources	3900 Commonwealth Boulevard Tallahassee 32303
Georgia	Department of Natural Resources	Trinity-Washington Bldg. 270 Washington Street Atlanta 30334
Guam	Government of Guam	Agana 96921
Hawaii	Division of Fish & Game Department of Land & Natural Resources	1151 Punchbowl Street Honolulu 96813

Indiana	Division of Fish & Wildlife Department of Natural Resources	607 State Office Building Indianapolis 46204
Iowa	State Conservation Commission	Wallace State Office Building 9th and Grand Des Moines 50319
Kansas	Fish and Game Commission	Box 54 A Rural Route 2 Pratt 67124
Kentucky	Department of Fish & Wildlife Resources	592 East Main Street Frankfort 40601
Louisiana	Department of Wildlife and Fisheries	P.O. Box 15570 Baton Rouge 70895
Maine	Department of Marine Resources	State House, Station 21 Augusta 04333
Northern Mariana Islands	Division of Marine Resources	Office of the Governor Saipan 96950
Maryland	Tidewater Administration Department of Natural Resources	Tawes State Office Bldg Annapolis 21401
Massachusetts	Division of Marine Fisheries Department of Fisheries, Wildlife, and Recreational Vehicles	Leverett Saltonstall Building 100 Cambridge Street Boston 02202
Michigan	Department of Natural Resources	Box 30028 Lansing 48909
Minnesota	Division of Fish and Wildlife Department of Natural Resources	300 Centennial Building St. Paul 55155
Mississippi	Department of Wildlife Conservation	Box 451 Jackson 39205
Missouri	Department of Conservation	P.O. Box 180 Jefferson City 65101
Montana	Department of Fish, Game and Parks	1420 E. Sixth Avenue Helena 59601
Nebraska	Game and Parks Commission	Box 30370 2200 North 33rd Street Lincoln 68503

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New Mexico	Department of Game and Fish	State Capitol Building Sante Fe 87501
New York	Division of Marine Resources	Building 40, State University of New York Stony Brook 11794
North Carolina	Division of Marine Fisheries Department of Natural Resources and Community Development	Box 769 Morehead City 28557
North Dakota	State Game and Fish Department	2121 Lovett Street Bismarck 58501
Ohio	Division of Wildlife Department of Natural Resources	Fountain Square Columbus 43224
Oklahoma	Department of Wildlife Conservation	1801 North Lincoln Oklahoma City 73152
Oregon	Department of Fish and Wildlife	506 SW Mill Street Portland 97208
	Pacific Salmon Inter-agency Council	741 State Office Building Portland 97201
	Oregon State University	Corvallis 97331
Pennsylvania	Fish Commission	P.O. Box 1673 Harrisburg 17120
Puerto Rico	Marine Resources Development Corporation	P.O. Box 2629 Old San Juan Station 00
Rhode Island	Division of Fish and Wildlife Department of Environmental Management	Washington County Government Center Tower Hill Road Wakefield 02879
South Carolina	Wildlife and Marine Resources Department	P.O. Box 167 Columbia 29202
South Dakota	Department of Game, Fish and Parks	Sigurd Anderson Building 445 East Capitol Pierre 57501

Utah	Division of Wildlife Resources State Department of Natural Resources	1596 West North Temple Salt Lake City 84116
Vermont	Fish and Game Department	5 Court Street Montpellier 05602
Virgin Islands	Department of Conservation and Cultural Affairs	Governor of the Virgin Islands St. Thomas 00801
Virginia	Marine Resources Commission	P.O. Box 756 2401 West Avenue Newport News 23607
	Institute of Marine Science	Gloucester Point 23062
Washington	Department of Fisheries	Room 115 General Administration Bldg Olympia 98504
	Northwest Indian Fisheries Commission	2625 Parkmont Lane SW Olympia 98502
West Virginia	Department of Natural Resources	1800 Washington Street, East Charleston 25305
Wisconsin	Department of Natural Resources	Box 7921 Madison 53707
Wyoming	Game and Fish Department	Box 1589 Cheyenne 82001

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#### Southeast Region

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Kentucky  
Louisiana  
Mississippi  
Missouri

Nebraska  
New Mexico  
North Carolina  
Oklahoma  
Puerto Rico  
South Carolina  
Tennessee  
Texas  
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Montana  
North Dakota  
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studies have resulted in 673 publications, of which 579 have appeared in scientific journals and 94 have been for partial fulfillment of the requirement for advanced degrees from educational institutions. The literature citations list the project numbers in parentheses.

Some of the reports are available from the National Technical Information Service (NTIS). NTIS sells these reports as either paper or microfiche copies. Its address is:

National Technical Information Service  
U.S. Department of Commerce  
Springfield, VA 22151

BRYAN, C.E.

1983. Abundance of Brown Shrimp (Penaeus aztecus) as Related to the 1982 Closure of the Texas Territorial Sea to Shrimping. TX Prks. & Wildl. Dept., Mgnt. Data Series No. 52: 41pp. (TX 2-385-R).

BRYAN, C.E., TERRY J. CODY and GARY MATLOCK

1983. Organisms Captured by the Commercial Shrimp Fleet on the Texas Brown Shrimp (Penaeus aztecus Ives) Grounds. TX Parks and Wildl. Dept. Tech. Series No. 31: 26pp. (TX 2-202-R).

CREASER, E.P. and D.A. CLIFFORD.

1982. Life history studies of the sandworm, Nereis virens Sars, in the Sheepscot Estuary, Maine. Fish. Bull. 80: 735-745 (ME 3-16-R).

CREASER, E.P., D.A. CLIFFORD, M.J. HOGAN, and D.B. SAMPSON.

1983. A commercial sampling program for sandworms, Nereis virens Sars, and bloodworms, Glycera dibranchiata Ehlers, harvested along the Maine coast. NOAA Tech. Rep. NMFS SSRF-767 (ME 3-231-R).

CRESCO, V.A. and M.M. BLAKE.

1983. Feeding ecology of coexisting larvae of American shad and blue back herring in the Connecticut River. Trans. Amer. Fish. Soc. 112:525-532 (CT AFC-13).

GOUDIE, CHERYL A., KENNETH B. DAVIS, and BILL A. SIMCO

1983. Influence of the Eyes and Pineal Gland on Locomotor Activity Patterns of Channel Catfish Ictalurus punctatus. Univ. of Chicago. Physiol. Zool. 56(1):10-17 (TN 2-347-R).

GREEN, ALBERT W. AND GARY C. MATLOCK

1983. A Method of Directly Estimating the Tag-Reporting Rate of Anglers. Transactions of the American Fisheries Society, 112:412-415. (TX 2-310-R).

HAWKINS, W.E., M.A. SOLANGI and R.M. OVERSTREET

1983. Ultrastructure of the Microgamont and Microgamete of Eimeria funduli, a coccidium parasitizing killifishes. Journal of Fish Diseases, 6:45-57 (MS 2-325-R and 2-382-R).

\*Supplemental to activity report publication for previous fiscal years.

HENDRIX, SHERMAN S. and ROBIN M. OVERSTREET

1983. Evaluation of the Status of Texanocotyle pogonialis and Laterocotyle padreinsulae. J. Parasitol., 69(2): 431-432 (MS 2-382-R).

KROUSE, J.S.

1983. Description of DMR's juvenile lobster mark-recapture investigation and some preliminary findings (1977-1982). Maine Dept. Mar. Resour. Lobster Infor. Leaf. No. 11 (ME 3-300-R).

LABAR, G.W. and D.E. FACEY

1983. Local movements and inshore population sizes of American eels in Lake Champlain, Vermont. Trans. Amer. Fish. Soc. 112:111-116 (VT 3-241-D).

LIBBY, D.A.

1982. Decrease in length at predominant ages during a spawning migration of the alewife, Alosa pseudoharengus. Fish. Bull. 80:902-906 (ME AFC-21).

MASSOUD, AHMED A., BILL A. SIMCO and KENNETH B. DAVIS

1983. Annual Changes in Basophilic Cell Types in the Pituitary Gland of Channel Catfish, Ictalurus punctatus. Comp. Biochem. Physiol. 74A(3):513-520 (TN 2-347-R).

MCFACHRON, LAWRENCE W. and GARY C. MATLOCK

1983. An Estimate of Harvest by the Texas Charter Boat Fishery, Marine Fisheries Review, 45(1): 11-17 (TX 2-310-R).

McCLOY, Thomas W.

1983. Hard clam mortalities associated with a winter relay program. NJ Dept. Envir. Protect., Div. Fish, Game and Wildl. Tech. Rep. 83-1 (NJ 3-332-R).

NASH, G.M.

1983. 1982 Massachusetts lobster fishery statistics. MA Div. Mar. Fish., Tech. Ser. No. 17, 19 pp. (MA 3-371-D).

NORTON, VIRGIL, TERRY SMITH and IVAR STRAND

1983. Strippers, the Economic Value of the Atlantic Coast Commercial and Recreational Striped Bass Fisheries. MD Sea Grant Pub. No. UM-SG-TS-83-12, pp. 54.

OLNEY, J.E., G.C. GRANT, F.E. SCHULTZ, C.L. COOPER, and J. HAGEMAN

1983. Pterygiophore-interdigitation patterns in larvae of four Morone species. Trans. Amer. Fish. Soc. 112:525-531 (VA AFC-11).

OVERSTREET, ROBIN M.

1983. Aspects of the Biology of the Red Drum, Sciaenops ocellatus, in Mississippi. Gulf Research Rpts. Supp. 1, ISSN:0072-9027:45-69 (MS 2-325-R, 2-382-R & 2-393-R).

OVERSTREET, ROBIN M. and RICHARD W. HEARD

1983. Food Contents of six commercial fishes in Mississippi Sound. Gulf Research Rpt., 7(2):137-149 (MS 2-325-R).

OVERSTREET, ROBIN M.

1983. Metazoan Symbionts of Crustaceans. The Biology of Crustaceans, 6:155-250 (MS 2-325-R).

OVERSTREET, ROBIN M.

1983. Aspects of the Biology of the Spotted Seatrout, Cynoscion nebulosus, in Mississippi. Gulf Research Rpts. Supp. 1, ISSN:0072-9027: 1-44 (MS 2-325-R, 2-382-R and 2-393-R).

SPILLER, KYLE W.

1982. The Daytime Fall Southern Flounder Recreational Fishery in Three Texas Passes. TX Park. & Wildl. Dept., Mgmt. Data Series No. 46, 17 pp. (TX 2-310-R).

STUCK, KENNETH C. and HARRIET M. PERRY

1983. Morphological Characteristics of Blue Crab Larvae, Callinectes sapidus Rathbun, Northern Gulf of Mexico. Gulf States Marine Fisheries Commission: 53 pp. (GSMFC 83-10).

THOMAS, J.C., C.C. BURKE, G.A. ROBINSON, and D.B. PARKHURST

1983. Catch and effort information on the Maine Commercial lobster (Homarus americanus) fishery, 1967 through 1981. Maine Dept. Mar. Resour. Lobster Infor. Leaf, No. 12 (ME 3-300-R).

WALTON, C.J.

1983. Evidence for a relationship between the abundance of spawning anadromous alewives and numbers of emigrating juveniles. Maine Dept. of Mar. Resour. Res. Ref. Doc. 83/10 (ME AFC-21).

WEBER, A.M. and P.T. BRIGGS

1983. Retention of black sea bass in vented and unvented lobster traps. *New York Fish and Game J.* 30:67-77 (NY 3-312-R).